Date: Fri, 13 May 94 04:30:09 PDT
From: Ham-Ant Mailing List and Newsgroup <ham-ant@ucsd.edu>
Errors-To: Ham-Ant-Errors@UCSD.Edu
Reply-To: Ham-Ant@UCSD.Edu
Precedence: Bulk
Subject: Ham-Ant Digest V94 #141
To: Ham-Ant

Ham-Ant Digest Fri, 13 May 94 Volume 94 : Issue 141

Today's Topics:

Send Replies or notes for publication to: <Ham-Ant@UCSD.Edu>
Send subscription requests to: <Ham-Ant-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Ant Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-ant".

Date: 11 May 1994 22:45:59 GMT
From: agate!overload.lbl.gov!s1.gov!fastrac.llnl.gov!usenet.ee.pdx.edu!
cs.uoregon.edu!reuter.cse.ogi.edu!psgrain!nntp.cs.ubc.ca!newsxfer.itd.umich.edu!
gatech!taco.cc.ncsu.@@ihnp4.ucsd.edu
Subject: A "shorty" 40 M mobile antenna
To: ham-ant@ucsd.edu

In article <2qr1ua$hnm@chnews.intel.com> cmoore@ilx018.intel.com (Cecil A. Moore
-FT-~) writes:
>.....
>One thing you might not know is with a rear bumper mounted mobile antenna,
>at the frequency where the car body is a 1/4 wavelength, the antenna system
>turns into a beam with gain toward the front of the car. My S10 pickup has
>a lot of gain on 17m. On an 'S' meter test, my ground-wave jumped 4 'S' units
>15 miles away when I pointed the S10 toward KG7QJ's receiver. Now, I'm not
>saying it jumped 24db... just 4 'S' units on KG7QJ's receiver. I went from
>Q1 to Q5.

>
>73, KG7BK, CecilMoore@Delphi.com

A couple of years back I modeled my car-antenna combo with K6STI's
MiniNEC.

I also did noise bridge measurements to determine the apparent feed point
impedance on each band....80 -> 10.

I modeled the Caprice car body as a very thick, horizontal cylinder,
situated close to the ground...and the mast antenna as 1" thick.

Yes, the beam pattern (angle of maximum take-off and asymetry) changes
according to freqency.

What surprised me was that the MiniNEC closely predicted the actual
resistive component measured with my noise bridge! 55 ohms on
80 meters and going up to a 95 ohm on 10 meteres.

Clearly feed point impedance includes a non-radiative component (ground
loses)...

Personally, I discount the common lore that a mobile antenna is a
"ground plane"...perhaps true on 2 M., but surely not on 40 M.

Now I own a 79 Ford LTD, a slightly smaller car than the Caprice.
Recently I've checked out the behavior using my MFJ SWR analyser, as
I varied my mast system between 15 MHz and 13 MHz. There is a
very strong SWR effect...meaning that the lowest SWR obtainable as the
mast height increases, varies over almost a full unit. This can not
be due to the small change in mast height (which is already over 16 ft.),
but must be due to changing Q of the car body as frequency is varied.

When I did the same sweep from 9 MHz -> 6 MHz, the minimum SWR varied
just as greatly...even though the mast now had a loading coil at
the 12 ft. point...again, apparently the Q of the car body varies with
frequency.

--
73/Steve/AB4EL/nmodena@unity.ncsu.edu

Date: Wed, 11 May 1994 08:36:05 -0400
From: ftpbox!mothost!lmpsbbs!NewsWatcher!user@uunet.uu.net
Subject: dBd
To: ham-ant@ucsd.edu

In article <2qlthk$5of@tekadm1.cse.tek.com>, royle@tekgp4.cse.tek.com (Roy
W Lewallen) wrote:

> jeffj@cbnewsm.cb.att.com (jeffrey.n.jones):
>
> >[A good summary of MININEC use]. . .
>
> >CALCULATE PATTERN IN DBI OR VOLTS/METER (D/V)? Put D here for DBI. DBI
> >usually stands for DBs over a Isotropic Dipole. Substract 2-3 DBs to
> >get what it would be in the real world as a Isotropic dipole doesn't exist.
> >Dipoles are considered to have 2-3 DB gain over a Isotropic Dipole.
>
> dBi is dB over an isotropic antenna (not dipole). It's a fictitious
> antenna in free space which radiates equally in all directions. The
> common reference for dBd is an equally fictitious antenna -- a dipole
> in free space. This has 2.15 dB gain over the isotropic source. Although
> dBd can be useful in doing computer analyses of antennas in free space,
> DON'T EVER confuse the free-space dipole with a real one. A dipole over
> the earth is constrained to radiate in a hemisphere, rather than the
> sphere available to the free-space dipole. This increases its field
> strength 3 dB. Additional gain is obtained by ground reflection.
> Consequently, it's easy to build a back-yard dipole with 6.5 dBi or so,
> or greater than 4 dBd.
>
> Roy Lewallen, W7EL
> roy.lewallen@tek.com

Roy, the comment you made about the "real dipole" shows the inaccuracy
of either the definition or the measurement techniques utilized. The
half-wave dipole is the measured known reference antenna. It will
ALWAYS have a calculated gain of 2.15 dB over the fictitious isotropic
radiator. The half-wave dipole is the reference against which all other
antennas are measured on the real world antenna ranges, since the
isotropic concept does not exist in reality.

Most manufacturers are falling victim to their marketing departments by
quoting gains in dBi just to look like they build a better antenna in
less space. This "bigger fish" technique is often employed by amateurs
who need to think that their antenna design is new, radically different,
and therefore more than 100% efficient. The laws of physics clearly
supercede marketing hype, but you have to know the rules to understand
the difference. The problem is so severe that the EIA has had to even
define that you must quote only the gain measured at the horizon, not
the maximum in the main lobe. This provides some slight assurance that
the gain quoted could be measued in a real-world installation.

Apparently you were refering only to your personal experience with an
HF dipole mounted less than one wavelength above the ground surface,

because that is the only time your statement would be true. Most
antenna research is done at VHF, UHF, or above where it is quite easy
to position antennas multiple wavelengths from a reflector such as the
surface of the earth. At HF, the main lobe may be elevated by 20 to 90
degrees, so unless you own an AWACS plane, you seldom will be able to
duplicate the gain figures quoted by reputable manufacturers.

I am quite curious how you actually _measured_ the gain of the backyard
dipole with 6.5 dBi gain that is so easy to build. If you can get 4 dB
more out of a true half-wave dipole, you've rewritten physics and
electronic theory and you certainly need a patent attorney immediately.
On the other hand, if the antenna is longer than a half-wave in length
or you are comparing it against a 5BTV, you need to review the official
definitions and adjust appropriately.

--
Karl Beckman, P.E.   < The difference between genius and stupidity >
Motorola Comm - Fixed Data < is that genius has its limits.   -Unknown >

The statements and opinions expressed here are not those of Motorola Inc.
Amateur radio WA8NVW @ K8MR.NEOH.USA.NA   NavyMARS VBH @ NOGBN.NOASI

Date: 10 May 1994 23:35:37 GMT
From: parc!wirish@decwrl.dec.com
Subject: Loop Skywire
To: ham-ant@ucsd.edu

whitemp@hemp (Mike White) writes:

>Hello-
>   Now that the weather in this part of the country is turning Very
>Nice, and classes are about to end, what else can a young (married)
>man's fancy turn to? But of course, antennas!

>   What I was wondering, does anyone have any comment on the loop
>Skywire antenna that is in the Handbook? It looks pretty good, and the
>article claimes that it does well, but I would be interested in other
>comments as well.

>Thanks in advance-
>   Mike White
>   N9UXC/KT WHITEMP@cnsvax.uwec.edu

Mike,

I recently built the 80m version of the Loop Skywire that you mention.
I have it supported in 6 places, roughly forming a rectangle with about
a 2:1 length/width ratio, up at between 20-30 feet above the ground.
With my rig's built-in antenna tunner I am able to get a good match
on 80, 40, 15, and part of 10m. I am dissapointed that I do not get
a very good match on 20m -- I might be able to prune it a bit to tweak
things for 20m but I don't really feel like getting into that. My rig's
built-in tunner does not operate on 160m so I am not able to try to use
it as an end-loaded long-wire / vertical on 160m as they mention in the book.
(I tried it without the tunner and the SWR was, understandably, quite high.)

I have not had the chance to do much operating with the antenna yet but
it seems to perform well on 80m and 40m. I have worked some contacts
on 80m and 40m and all the reports have been quite good. 15m was dead,
but I think that that is the band's fault, not the antenna.

My plan is to keep the Loop Skywire but to augment it with a multi-band
dipole cut for the higher frequencies: 30m, 20m, 17m, and 15m.

  Wes Irish
  WA2CRQ/6

Date: Wed, 11 May 1994 16:04:12 GMT
From: spsgate!mogate!newsgate!news@uunet.uu.net
Subject: Loop Skywire
To: ham-ant@ucsd.edu

I ran an 80M loop "Skywire" like in the handbook. It was up about 25 ft and fed
with ladder line and a tuner. It worked real well on 20M and up and pretty well
on 80 - 30M. I got better reports using it on 20M than when using my
Butternut...about 2 S-units, according to a friend with whom I had a regular
sked on 20 for a while.

One thing to be carful of is to make it as close to a square as possible. Too
far from a square and it starts to exhibit some sharp lobes, depending on the
exact configuration and frequency, height, etc. Actually, I think a circle
would be best but that's pretty hard to do for most of us. Mine was within a
few feet of being square.

Also, the higher, the better, esp on the lower bands. On 80 and 40 it was
pretty much a cloud warmer but was good for relatively close stations. I
worked quite a bit of DX on 20M and up with it and my Kenwood 430S running
barefoot (100W).

It was also a lot quieter than other antennas I've tried.

If you have the wire and four well-placed supports, give it a try.

73..   Mark   AA7TA

Date: Thu, 12 May 94 02:34:37 -0500
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!agate!howland.reston.ans.net!noc.near.net!
news.delphi.com!usenet@network.ucsd.edu
Subject: Marine vhf/uhf antenna
To: ham-ant@ucsd.edu

I see hundreds of boats on the water that have 2,3,4,5+ antennas sporting
from the cab, deck etc. They all look to be "commercial" (Shakespear etc)
antennas. Obviously, the marine band and c.b. band antennas are available
but for some reason the comercial "ground-exempt" ham marine comercially
made antennas seem to be overlooked.

Can anyone ID a comercial antenna maker that makes a GOOD LOOKING 146.00 mhz
and or 440 mhz antenna that I can buy for my 19' IO?

Thanks.....
                                    BOB (N7RBP)

Date: Tue, 10 May 1994 23:56:46 GMT
From: ihnp4.ucsd.edu!sdd.hp.com!elroy.jpl.nasa.gov!swrinde!cs.utexas.edu!convex!
news.ssc.gov!fnnews.fnal.gov!att-in!cbnewsm!jeffj@network.ucsd.edu
Subject: Noise in apartment antenna + 20
To: ham-ant@ucsd.edu

In article <2qlh9g$ekd@vixen.cso.uiuc.edu> ignacy@uiuc.edu (Ignacy Misztal)
writes:
>In <9405081433.AA07741@venus.atkc.com>, davev@venus.ATkc.COM (Dave van De Kerk)
writes:
>>While awaiting my license, I bought an Icom 720 A and tried stringing
>>up a simple horizontal dipole. I am getting +20 static whenever I rig
>>up the antenna. I'm using speaker wire for the antenna and speaker
>>wire for the ground. Unhooking the ground seems to do nothing at all.
>the noise sources can be summarized as follows:
>1. Computer (noises differ depending on what is being computed),
>2. TV receivers and monitors (strong harmonic every 19-50 KHz),
>3. Light dimmers, variable-speed fans etc., - very strong power noise
>that easily travel on power lines,
>4. Fluorescent lights, especially "lightsticks", similar to 3 but
>weaker.
>5. Arcing in furnaces (?), noise less structured than any other

>sources.

Also do forget Nintendo systems. When ever my kids turn it on it generates
hash all over the bands! I do get even though, every time I key up Mario
crashes, heh heh... 8-)

Jeff

--
 Jeff Jones AB6MB | Vote out those who voted for the North American
 j.jones91@genie.geis.com | Free Trade Agreement!
 Infolinc BBS 510-778-5929 |

Date: 11 May 1994 18:49:17 GMT
From: ihnp4.ucsd.edu!newshub.sdsu.edu!nic-nac.CSU.net!usc!howland.reston.ans.net!
agate!kabuki.EECS.Berkeley.EDU!kennish@network.ucsd.edu
Subject: radar detectors
To: ham-ant@ucsd.edu

In article <11MAY94.16120300.0043@UNBVM1.CSD.UNB.CA>,
MORROW J <K2KA@UNB.CA> wrote:
>I have many questions about the operation of radar detector.

Hmm, Canada, eh? They ban those puppies out there, no?

Anyhow. Answers.....

> Firstly, in order to detect a specific frequency, how is this
> accomplished? Does the detector produce a matching frequency to
> compare with the incoming radar signal?

Same way that most all radios tune a specific station. Most
all radar detectors are superhet receivers. For example, let's
say you are looking for a 24.150 GHz K band radar.... You would
locally generate a frequency (LO) say 25.150 GHz and mix it in
a microwave diode. Then you would look for a 1 GHz mix product,
which is then filtered and detected. You can tune around the
frequencies of interest by tuning the LO, so if you wanted to
look for Ka band, you would retune your LO to 35 - 38 GHz.
I doubt any detectors out there are using direct conversion.

>Can police "electronically" determine if you possess a
>radar detector?

Yup, those Canadian cops have them. Every superhet receiver
leaks a bit of LO, as no mixer has infinite reverse isolation.
Radar detectors are real bad since they use a passive mixer
due to the high frequencies. The LO goes right back out the
antenna. Some real cheap units will set off another detector.

>If so, is there a method to mask the radiation emitted
>from the detector, but still ensure its sensitivity? For example, wrap
>the detector in aluminum foil leaving only the front (the horn style
>antenna) exposed.

Wrapping the device may help a bit, but since the LO goes out
the antenna, it's tough. Some detectors which use low side
injection (LO lower than desired RF) will make the waveguide
from the antenna to the diode just above cutoff, so that the lower
frequency LO doesn't go back out. This only works for single
band devices. Other ways are using a perturbation (i.e. screw)
in the waveguide to notch out the LO frequency. This works
to an extent.

>Is there a method of making it undetectable and perhaps stealthy?

Change the LO. Those radar detector detectors are also superhet
devices, that look for the LO that most units use. If you want
to spend the money and effort, you can make your detector use
a non-standard LO. You could also make a radar
detector detector detector on the same principle. Look for
the cop's LO.

I won't go into details since I may be abetting a crime, but
I think you get the drift. Since we are on the
subject, the above is for education only, and I do NOT
recommend that you do any of the above. Drive at
or below the speed limit.

-Ken

End of Ham-Ant Digest V94 #141
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